Abstract of the Disclosure

[00101] A reagentless, reusable bioelectronic DNA or RNA sequence sensor is disclosed. The sensor includes a DNA probe tagged with a electroactive, redoxable moiety, self-assembled on or near an electrode. This surface-confined DNA probe structure undergoes hybridization-induced conformational change in the presence of the target DNA/RNA sequence which change the electron-transfer distance between the redoxable moiety and the electrode thereby providing a detectable signal change. In a preferred application, the target sequence is associated with an object and its detection is correlated with the authenticity of the object.